

What is claimed:

1. A fluid pump comprising:

a centrifugal rotor having a hub and an outer diameter;

5 a housing for rotatably supporting said rotor and including a seal housing;

a first rotating seal member coupled to the hub of said rotor;

a second static seal member coupled within said seal housing and having a portion thereof in contact with a portion of said first seal member;

wherein said housing defines a fluid passageway for providing a flow of fluid
10 from the outer diameter of said rotor toward the portion of said second seal in contact with the portion of said first seal, said passageway having portion along the length thereof with a cross sectional area that decreases in the direction from the outer diameter toward the portion of said second seal.

15 2. The pump of claim 1 wherein said housing includes a substantially planar surface, said rotor includes a backplate spaced apart from and rotating over the surface of said housing, said fluid passageway includes a first wall intersecting the surface of said housing and a second wall intersecting the surface of said housing, and the distance
between said first wall and said second wall measured perpendicular to the path of said
20 passageway decreases in the direction from the outer diameter toward the portion of said second seal.

3. The pump of claim 1 wherein said rotor includes a substantially planar backplate, and said passageway is located in a face of said housing opposite of the backplate.

5 4. The pump of claim 1 wherein the path of said passageway includes a curved portion.

5. The pump of claim 1 wherein the rotor has a direction of rotation, and the path of said fluid passageway includes a directional component in the same direction as
10 the direction of rotation.

6. The pump of claim 1 wherein the depth of said passageway decreases in the direction toward said seal housing.

15 7. The pump of claim 1 wherein said rotor has a direction of rotation and the depth of said passageway increases in the direction of rotation.

8. A fluid pump comprising:
a centrifugal rotor having a backplate;
20 a housing for rotatably supporting said rotor and including a seal housing and a surface facing said backplate;
a first rotating seal member coupled to said rotor;

a second static seal member coupled within said seal housing and having a portion thereof in contact with a portion of said first seal member;

wherein the surface of said housing includes an open channel fluid passageway, said passageway having cross sectional shape for at least a portion thereof which is
5 selected from the group consisting of trapezoidal, triangular, oval, polygonal, and circular, said passageway directing fluid flow toward said seal housing.

9. The pump of claim 8 wherein said rotor has a direction of rotation and the depth of said passageway increases in the direction of rotation.

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10. The pump of claim 9 wherein the depth of said passageway decreases in the direction toward said seal housing.

11. The pump of claim 9 wherein the depth of said passageway increases in
15 the direction toward said seal housing.

12. A fluid pump comprising:
a centrifugal rotor having a backplate;
a housing for rotatably supporting said rotor and including a surface substantially
20 parallel to and spaced apart from said backplate;
a first rotating seal member coupled to said rotor;
a second static seal member coupled within said housing, a portion of said second seal member being in contact with a portion of said first seal member;

wherein the surface of said housing includes an open channel fluid passageway for providing a flow of fluid to the portion of said second seal in contact with the portion of said first seal, said passageway having a curved portion along the length thereof.

5 13. The pump of claim 12 wherein the rotor has a direction of rotation, and the curved portion of said fluid passageway includes a directional component in the same direction as the direction of rotation.

10 14. The pump of claim 12 wherein the curved portion of said passageway is adapted and configured such that rotation of said backplate across the surface of said housing increases the velocity of the fluid flowing within the passageway toward the portion of said second seal.

15 15. The pump of claim 12 wherein the surface of said backplate spaced apart from the surface of said housing is substantially planar.

16. The pump of claim 12 wherein the path of said passageway is circular.

20 17. The pump of claim 12 wherein said first seal member has a diameter, and the exit of said passageway projects a path that is at least partly tangential to the diameter.

18. The pump of claim 12 wherein said rotor has a rotational axis, and said passageway is curved in a plane orthogonal to the rotational axis.

19. A fluid pump comprising:

5 a centrifugal rotor having a backplate and a hub;

a housing for rotatably supporting said rotor and including a seal housing and a surface facing said backplate and spaced apart from said backplate;

a first rotating seal member coupled proximate the hub of said rotor;

10 a second static seal member coupled within said housing, a portion of said second seal member being in contact with a portion of said first seal member;

wherein the surface of said housing includes an at least partially open-channel fluid passageway, said rotor has a direction of rotation, and said passageway is adapted and configured such that rotation of said backplate in the direction increases the energy of the fluid in said passageway flowing toward said seal housing.

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20. The pump of claim 19 wherein rotation of said backplate in the direction increases the velocity of the fluid in said passageway flowing toward the portion of said second seal member.

20 21. The pump of claim 19 wherein rotation of said backplate in the direction increases the pressure of the fluid in said passageway flowing toward the portion of said second seal member.

22. The pump of claim 19 wherein said passageway an includes an exit and a floor, the floor including a planar ramping section proximate the exit to direct fluid flow toward said second seal portion.

5 23. The pump of claim 19 wherein said rotor has an outer diameter and hub, said first seal is coupled to said hub, and said passageway provides fluid from the outer diameter of said rotor toward said seal housing.